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ABSTRACT

Two complementary strategies intended to achieve a strengthening of the American educational system within the next 5 years and a transformation of that system within 10 years are presented in this report. The shorter, 5-year strategy targets conventional schools and is intended to help raise student achievement and professional competence. The process focuses on the implementation of proven practices--typically classroom level instructional practices offered through nationwide dissemination networks. The strategy depends on active professional interest and sustained efforts at identifying viable practices. Researchers can help practitioners understand and publicize their results while adding to the general pool of innovation information. Funding for the process should be made a national and state priority. The longer-term strategy is aimed at innovators who must develop drastically new forms of schooling. The first step in the process is to define the characteristics of the desired educational product. Second, practical strategies for achieving these ends, incorporating reevaluated roles for professional and nonprofessional participants, must be developed. These strategies can be tested in settings in which traditional educational regulations (including certification) would be revised. These experiments would eventually provide procedures suitable for dissemination using the short-term strategy discussed earlier. (PGD)

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Building an Infrastructure for Innovation and Improvement: Short and Long-Term Strategies

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BUILDING AN INFRASTRUCTURE FOR INNOVATION AND IMPROVEMENT: SHORT-TERM AND LONG-TERM STRATEGIES

David P. Crandall

In the preceding papers by Harvey, Loucks-Horsley, and Cox, a review of the major findings of the recent rash of well publicized education reports and a summary of the not so well publicized reports on successful school improvement efforts have been presented. The former paint a picture of desire for reform unconnected to knowledge of how to achieve it. The challenge and the opportunity for making the connection lies before us and is, in my judgment, a special obligation for researchers concerned with research utilization and the improvement of practice.

In the pages that follow, I would like to present two complementary strategies for sustaining the necessary infrastructures to achieve first a strengthening and then a transformation of American education. The first focuses on the short run from the present to five years hence, the second beginning now and building to a culmination within the next decade. Both presume an emphasis on what we know about the how of improving schools and what we are beginning to know about the ways of transforming complex social systems through a mix of persistence, passion, politics, people, and knowledge. That the latter, knowledge, is a weak lever in this process should be acknowledged at the outset. Nonetheless, it is the one around which we all ply our trade and therefore is an appropriate focus for our part in the effort ahead.

In each strategy I will articulate the principal goal that it seeks to achieve, identify the targets for its activities, identify the beneficiaries of success, describe the vehicles which would serve as the principal devices for introducing change, suggest where the primary impetus is likely to flow from, and touch briefly on likely costs.

Strategy Number One: Bringing Up the Floor

The first scenario is decidedly short term. It anticipates that it should be possible, based on our current knowledge, to elevate the modal repertoire of pedagogical practice and instructional effects in our schools in the next five years.

It is an image that capitalizes on our past investment in educational R&D and in school improvement. It is based on what we believe is known about the current conditions of most schools, the current capabilities of most school people, and the current knowledge base about interactive approaches to improving what goes on in classrooms and school buildings. It accepts, <u>temporarily</u>, schools as they are.

Targets for the short-term strategy are conventional schools, the professionals who occupy them, and the citizens who surround them, that is, the bulk of our schools and their teachers and administrators. These are not what have been referred to in the past as innovative schools, nor are these schools that are so debilitated by the confluence of internal and external conditions that they cannot be reasonably expected to respond to anything but a massive restructuring and rebuilding of their entire enterprise. Their common characteristic, besides their conventionality, is that they are ready to consider the introduction of new ways of organizing and conducting instruction in their classrooms.

The beneficiaries of the strategy are children currently performing at the average or below average level, and teachers and administrators whose principal characteristic is that they are unremarkable in their accomplishments. It is expressly focused on bringing up the floor of student achievement and professional competence such that these individuals will have some hope of remaining viable players in an educational system that will be faced with escalating challenges for change and reform in the decade ahead.

Such a strategy is explicit about going with the energy, of working with those who are ready and willing to consider alternative ways of doing business. For those who would argue that this denies assistance to the most needy, my response would be yes, it may, but they should benefit by the success of increasingly large numbers of their cohorts. Not by magic, as is so often the case, but by planful communication with them and openness to their inclusion when they deem themselves ready. For those who are not content with such a partial outcome, I can only recommend pursuing substantial additional resources which can be focused on top to bottom restaffing and reconfiguring of the most needy schools. The general strategy here presented will not suffice in revitalizing such schools and will lead only to frustration on the part of both the assisters and the assisted.

The impetus for this approach must come, in my judgment, from the current crop of part-time linkers who populate the states, practice-oriented researchers, most especially those housed in regional laboratories, and various other change agents who are spurred to action and drawn to the endeavor by the protective umbrella of exhortative excellence rhetoric currently being hoisted across the country.

The principal vehicles for this approach are what have come to be known as "proven practices." These are typically but not always classroom level instructional practices. Their distinguishing characteristics are:

- There is a substantial degree of specification as to their particulars in action, that is, what various components look like when enacted as well as some judgment about acceptable variations.

- An above average amount of credible information about their relative effectiveness exists, usually the results of a somewhat conventional evaluation.

- There is confirmation of effectiveness and relevance to current pressing needs by some professionally credible and obstensibly objective quality control procedure. Perhaps the most well known of these is the federally sponsored Joint Dissemination Review Panel (JDRP). Since 1972, the JDRP has routinely reviewed submissions from school districts and others who assert that they have an instructional offering worthy of validation based on its effectiveness in meeting its objectives, usually those related to student attitude, attendance, and/or achievement. Although the panel and its procedures have been criticized on many grounds, it represents the most viable current mechanism short of the market place. Such a device is clearly appropriate for jurying practices that by their nature are fundamentally artistic creations cloaked in scientific costumes.

- The practices are not simply collections of materials but are represented by people who either have had the direct experience of developing the successful practice or have been sufficiently involved in similar efforts in schools as to be credible to the typical teacher. Seasoned observers note that the most successful among these individuals carry a certain charisma which, coupled with the calibre of their alternative offering, energizes typical teachers to set forth on voyages of improvement with few guarantees of success.

- These practices are usually based more on accumulated craft knowledge than discernible research knowledge. The unfortunate fact of the matter is that the research community still has a long way to go in terms of converting the fruits of its labors into drinkable wine for the workers who populate the vineyards called schools. The transformations of knowledge necessary to produce a usable classroom practice are multiple, difficult but not impossible to achieve. The fact remains that the current state of the art is dominated by practitioner-developed innovations that have as their principal characteristics that they are concrete, classroom-friendly (that is, congenial to typical teachers and insertable in typical classrooms), and they are packaged in ways that make them accessible with a minimum of fuss and extra expense.

- These practices and their representatives are typically part of state or national networks that include linkers or facilitators who are ongoing partners with the purveyors of particular practices in the introduction and implementation process. These facilitators serve a critical function in alerting schools in their service area to the availability of an array of alternatives and when functioning at their best, assist school people in the consideration of those

> alternatives that might be brought into service to alleviate a priority which has crystallized or been identified in some more rational fashion. The external facilitators find internal partners inside the districts. These inside players, who are critical to the success of their cooperative ventures, are curriculum coordinators, assistant superintendents for instruction, an odd principal or two, and in the smaller districts the superintendent him or herself. Such people are the scanners, mappers, and matchers of priorities with solutions and of demands or talent with laboratories of opportunity.[1]

The focus for endeavors such as these are individual schools and the classrooms within them which have been legitimized in their endeavors by unequivocal leadership at the district level. The challenge for the players within the system and without is to take the success of an innovation in a single or several classrooms and work to accumulate it upwards in such a fashion that the entire school is elevated to a new level of accomplishment. Proven practices exist in adequate numbers in all the basic skills to accomplish this over a two to five year time period.

Support Necessary for Sustaining a Short-Term Strategy

The approach noted above could be characterized as modified RD&D (Blakey et al., 1983) or, more appropriate in my view, humaneering. It is an approach that is expressly aware of the centrality of people in the process of change, the idiocyncracy of circumstances and conditions in any one locale, and the importance of serendipity to success, be it of students or schools. It is an approach that attempts to consolidate the best that we know about how to improve conventional practice and capitalize on the tremendous investment in innovation made in the past twenty years. The approach accommodates lots of workable ways versus one best way. It will be pursued by a loose federation of improvement-oriented actors. This approach allows those whose leit motif has been the effective schools research to proceed side by side with those who favor a diffusion of exemplary practices strategy, asking only that the former spend some time translating their alleged successes into concrete and actionable forms so that they may be more readily considered and attempted by others. The supports necessary to sustain this approach over the next five years include the following:

[1] These characteristics are more fully described by Loucks-Horsley and Cox (1984) and Crandall and Associates (1982).

- It is imperative that the call for improvement be sustained at all levels within the broad profession known as education. Whatever his blindspots and ideologically derived inanities and explicit actions (belying his words) to cut back the importance of education nationally, the President has done the field a service by helping move the subject of schools and their improvement to the front page. Secretary Bell has been a tireless and adroit advocate for improvement even if his emphases seem misplaced and often naïve. Governors and legislatures that have moved to supply resources even if often for the wrong activities are to be applauded -- applauded for doing something, not applauded for the particulars of what they do. A window of opportunity has been opened that the profession and those who seek to populate and improve it must move through with vigor. Rhetorical leadership is needed to keep the window open long enough for progress to be discerned and longer term efforts begun.

- Policies must be put in place fostering improvement of practice through the implementation of viable proven alternatives. School boards must be educated by their superintendents as to the folly of simply adjusting standards without taking concrete steps to improve classroom instruction. As many observers have noted before, more of the same will not represent improvement.

- Districts must supply incentives for those who can find and introduce new practices. This means legitimizing the activities of those in the central office or elsewhere who should be scanning the environment for alternative approaches to the priorities that have percolated up and crystallized in a given district. Matching these to the readiness and reality of individual schools is the other half of their job that should be rewarded. Similarly, attention should be paid to developing intangible professional incentives for teachers to take the risk and make the effort of trying something new in their classrooms while the protracted deliberations regarding increased teacher pay and/or career ladders play out.

- Leadership training for principals must be intensified. It is clear that the school is the appropriate focus for these or any improvement efforts. The principal is in a key position eventually to provide the within-building leadership necessary to make a long term difference. Unfortunately, most do not now possess the requisite skills to support instructional change. Firm but friendly procedures for upgrading skills should be introduced. Those who progress should be rewarded; those who cannot make the grade should, after a reasonable period of time, be replaced.

- Search and seizure operations should be mounted. Processes for sweeping the environment for candidate practices and shepherding them through review procedures are becoming increasingly effective and efficient. These efforts should be continued and expanded at the local, state, regional, and national level. In the years ahead it seems obvious that the sweep should not be restricted simply to the best of local practice in public schools. Many practices worthy of emulation are being acted out in private schools, although as a practical matter one might not be too optimistic about finding readily transferable practices in the more selective independent schools. Their conditions are believed to be so dramatically different from those of public schools that knee-jerk rejection of their practice suggestions seems assured. The same reaction is not so inevitable with parochial schools and others with a student population more like that of the typical public school.

- Quality control procedures must be expanded. The mechanisms currently in place can be adjusted fairly readily both to accommodate more diverse perspectives in judging the worthiness of a particular practice and in setting in place a staging procedure such that the drastic funneling which now occurs is attenuated. Many practices suggest themselves as "promising" even if they are not at any given moment able to demonstrate believable evaluation confirmation. I believe that at minimum this nearly-ready condition should be legitimized. Perhaps the careful evaluation of such practices, identified at state or national level, can be subsidized so that the pool of validated projects could grow more quickly.

- Gaps in available practices should be filled posthaste. While the offerings in the basic skills seem more than adequate, searches to date have not been quite so successful in some other areas, i.e., science, bilingual education, and the emerging computer literacy. In these areas focused development efforts involving teams of practitioners and practice-oriented R&D types should be sponsored. Some of these needs may be localized and are not of the sort as to warrant the federal investment. Others are more clearly related to either the national interest or are a by-product of other national policies (i.e., immigration) and so can reasonably expect to call upon the federal dollars.

- Schools must be supplied with assistance both with respect to innovation awareness and more importantly, implementation assistance. There can be no question at this point that most schools must be stimulated by some congenial outsider to consider an array of alternatives. The prototypes for doing this successfully are operating in some states (e.g., Michigan and Illinois) and display themselves most prominently nationally through the efforts of the National Diffusion Network (NDN). The tripartite partnerships that emerge from

the coming together of facilitators with project advocates and local personnel committed to considering and implementing proven innovations bears continued support and modest expansion consistent with available resources. It is my belief that educational improvement is a national imperative and that this aspect of our infrastructure must be sustained on an interstate basis. Therefore continued federal help is mandatory. Of course these individuals are themselves analogous to school people in that they too need ongoing support and professional development to maintain their abilities and to hone their skills. Resources for such assistance must be supplied if the larger enterprise is to avoid stagnation.

The Role of Research in the Short-Term Strategy

One would hope we could mobilize to study an emerging phenomenon before it has run its course. The scenario outlined above virtually screams for focused engagement and longitudinal study. Possibilities include the following:

- Participate as a facilitator/participant in specially organized reflection/conception events. The image here is that there will be, as there are now, large numbers of local action teams who will have been activated by some combination of internal and external stimuli. Their focus on improvement will represent a change in practice for the typical school which is concerned more with maintenance than change. They are not likely to engage in much reflection upon their own events unless the opportunity is concretely presented and structured. A research-trained individual can help organize this process, help the local group to express their successes and aha's to a larger public, organize celebrations and improve connections with those who are all too often seen as occupying distant academic institutions far removed from and unconcerned with local realities. Guiding practitioners through a process that will help them to understand their experience and documenting the journeys taken together would be a most valuable contribution from the research community.

- Experiment with transforming knowledge. The suggestion is that one choose a finding or cluster of findings and/or what is believed to be a problem or priority area for schools and attempt to convert the finding into an actionable form. This exercise and the documentation of the effort would fill an important gap in our current knowledge.

- Help sniff out the pedagogical pros who may populate the schools in a particular area. They are among the sources of alternatives which could be brought to the attention of local facilitators who should be increasingly receptive to learning about good people either in their district or a neighboring district.

- Explore the character of craft competence. Though much has been written about the realities of the teacher (Lortie, 1975; Jackson, 1968) relatively little has been done to formulate a new conception of how teachers increase their competence once in a classroom situation. [See Huberman (1980) for a provocative treatment of how teachers make use of knowledge.] We badly need more detailed understandings of the phenomena if we are to be planful in future efforts to train or retrain instructional personnel.

- Monitor the entire enterprise, be it at a local, state or national level. The activities set off by the policy initiatives of the last few years offer fertile ground for investigation. My prediction for most is that the story will be one of disappointment, of policy directives not implemented, of standards set but not attained, of teachers who were provoked but not supported, and of publics who act more forcefully than they have to reject schools as we have known them. Alternatively and more optimistically, the enterprises which are underway and which may expand consistent with the strategy described above need to be captured so that our accomplishments do not go unrecognized.

Costs of Implementation

In closing the discussion of a short-term strategy, let me touch briefly on the matter of costs. The amount of federal money currently being directed to improvement-related activities is probably less than fifty million dollars. This figure represents the combined totals of the major efforts of the NIE labs and centers, the National Diffusion Network, and the few categorically related programs that seriously attempt to focus directly on schools. As of just a few years ago, there were virtually no identifiable state-based efforts focused directly on classroom improvement. In my judgment, if approximately twenty-five million dollars of federal money were focused on this effort in the near term, with increases to accommodate any future inflation, we could go a long ways in achieving the overall goal. It is not inconceivable to imagine a circumstance where states would be offered the incentive of matching this amount in such a way as to double their available pot. I believe that at least 50% of the dollars allocated to support of labs and centers should, over the next five years, be directed towards such relatively rapid, attainable, and accountable alterations in the current system of education. Such a redirection of effort, when joined with that of other efforts such as the NDN, would enhance the critical mass of professionals who have a stake in bringing schools to some minimum level of accomplishment. These same individuals would therefore constitute a strengthened constituency for the sustaining of this strategy as well as advocating investments in more transformational strategies such as those to be described shortly. To do otherwise under the circumstances seems misguided if not unconscionable.

Having described a strategy that begins where we are in terms of our knowledge of change and where schools are in terms of their ability and probability of changing, we turn now to a longer-term strategy that is directed toward creating a dramatically different educational enterprise.

Strategy Number Two: The Scenario for Transforming the Educational Enterprise

Earlier we lamented the inattention to the how of school improvement. We attempted to bridge that gap in the preceding pages. However, our discussion does not deal much with transforming the system in major ways. Yet there is an emerging consensus that such a transformation is imperative. The discussion in the general press calls for dramatic change if the country is to retain its primacy in the world. The most common argument revolves around the economy and America's position in the international marketplace. We are treated to half-baked comparisons between our educational system and its levels of attainment and those of Japan, West Germany, the Soviet Union, and Scandinavia. We are reminded daily of the lamentable quality of America's manufactured products and the inappropriateness of its basic industries in the current context. [This common misperception fails to acknowledge that the U.S. has been a service economy for more than 40 years (Shelp, 1984).] Predictions are made about our move toward an information society characterized more by ideas and their transfer than products and their shipment. Our own work with employers reveals an escalating and potentially disasterous distress over the learning capabilities of both its entering workers and its current employees. Discrepancies between what employers say they are getting from the schools and what the schools believe they are supplying employers have been documented (Center for Public Resources, 1982).

Fortunately, educators who for the most part are not part of the American mainstream are also calling for radically different approaches to learning and radically different structures for supporting learning on a lifelong basis. John Goodlad (1983) refers to an "ecology of institutions;" Seymour Sarason (1984) urges a community collaboration; Rec Neibuhr (1934) is passionate in his portrayal of an emerging paradigm shift toward a learning (versus education) system that reactivates communities around a common purpose and uses media as a means of facilitating participation. George Leonard (1984) has brought the debate and his vision of the future to the popular publications of the managerial class. At virtually every recent meeting of concerned observers, frustration has been expressed with the current language that is used to describe the educational enterprise and the inappropriateness of the metaphors that are used to characterize it. We decry the collapse of community and the rise in media-transmitted pap that plays to the lowest common denominator in our society and converts the populace into increasingly mindless consumers of increasingly useless products.

It seems to me that the time is right that, simultaneous with the attempts to bring up the floor in our schools, we must mount a major effort to transform the very enterprise we are in the process of shoring up. We must acknowledge our dilemmas in producing learning and take the responsibility for expanding the boundaries of what constitutes our conception of school while narrowing the focus of its endeavors. This new investment can be justified on the grounds of national defense or international economic competition or revitalization of the democratic ideal as one chooses. Its pursuit is at least as urgent if less certain than the preceding scenario. We should convert the potentially paralyzing fear of international competition into a motivating energy that engenders alternatives to the current deteriorating situation versus circling the wagons to simply protect the old. While the bulk of the troops must be deployed to protect the present populace, the experimenters and the scouts must move into unchartered terrain to experiment with new conceptions of education and schooling and discover new vistas.

Pursuit of this goal, the testing of alternative conceptions and operational forms of school, is targeted to the innovators among us, those who are past the point of the typical school. The beneficiaries are those communities and school people that are willing to take the risks of confronting the unknown and moving into it; those willing to develop together enough near-certainties that next steps can be taken. The impetus for this activity will be a combination of federal or state initiatives with bottom-up activity from a few self-selected schools. Many of the initiatives likely will be privately funded or mounted by educational entrepreneurs. The business community is a critical player in the success of this adventure.

My own thoughts on the possible facets of such a scenario represent an initial iteration, a sketch as yet incomplete and more felt than reflected. It is not tidy, many parts are missing, many parts are unidentified. It is nothing more than a first attempt. It is driven by a belief that we must work toward a condition where life-long learning is the norm and where such learning is viewed as the collective responsibility of the community, a community reconnected and revitalized in part by its pursuit of ways to enhance and orchestrate the learning of its citizens. It assumes that the knowledge and skills needed in the workplace are likely to change in five to ten year cycles beginning now. It assumes that technologies now becoming increasingly commonplace will function as tools in the quivers of those members of our society who have learned how to learn.

Though what is imagined eventually is a transformation of the culture of our country as well as the culture of each community, the focal point remains the school, both as a culture itself and as the potential pearl-producing piece of sand in the slippery ooze of a host community.

Critics and observers of the current educational enterprise note that today's students and young workers have no sense of history, do not appreciate literature, cannot grasp the import of science and technology for their lives, demonstrate an inadequate understanding of their responsibilities and potentialities as citizens, all too often are functionally illiterate, and most of all seem incapable of engaging in the reasoning necessary to learn on their own in the face of changing realities.

The pendulum swing that provoked the press for equity has led too frequently to variations of "everyone is entitled to his or her opinion" or "every achievement is equal." Many of the champions of the shift toward excellence believe that we are paying the price of the unintended consequences of such simplistic views in today's schools. It is perhaps not surprising that the "king-has-no-clothes" aspect of this dilemma should be expressed in a popular (versus professional) publication whose author trenchantly notes:

> It is not un-American to notice that people who store up more knowledge are, well, more knowledgeable. Also, the idealistic concept that all disciplines are equal, life experience being as valuable as physics and the knowledge of street slang comparable to a knowledge of Latin, does not work for a democratic reason -- most of the people don't believe it any of the time.

We will never realize our potential as a society if we persist in making such misguided equivalencies our educational policy. We must find ways of acting out a continued commitment to equity in concert with the imperative for excellence if we are to be able to hold our heads high with our own children and in the world.

Actions Necessary for Pursuing the Long-Term Strategy

I would advocate that we begin our endeavors by creating alternative images of either "an enlightened citizen" or of "a worker who has learned how to learn." Either choice is acceptable, depending on which age group one chooses to target and one's personal tendencies, concentrated action being the imperative. I suggest that such images be created by multiple groups no larger than nine including a skilled facilitator. The groups should consist of citizens, representatives of business and industry, and educational professionals.

John Goodlad among others has spoke convincingly of the fact that most parents, and by inference most citizens, have no interest in actually running the schools. Rather, they have an interest in influencing the nature of the enterprise and having easy access to knowlege about parts of the system, i.e., their local school building. Though too many business people have been either burned

or turned off by educators' expectations that public/private partnerships are comprised of public agendas financed by private pocketbooks, I believe the cause is not entirely lost and that enough circumstances of success can be structured to attract many of the current skeptics over the long haul.

Following the creation of images, I would suggest developing teaching and learning scenarios related to them. It is important that these be unconstrained by conventional conceptions of where learning occurs, what school is, and what we can't do. Rather they should be driven by what common sense and accumulating knowledge suggest are optimal or alternative ways to provoke and encourage accelerated learning by children and adults of all sorts.

Among these new scenarios should be not only the next generation of the core curricula, i.e., history, literature, science, civic understanding and literacy, but also other integrative non-academic subjects such as health, fitness, and communication. Schools have too long dealt with only parts of the people that populate them; this transformational effort should not make the same mistake.

Many of the teaching/learning scenarios thus created can be tried out in conventional contexts by teachers who are given the latitude to operate outside of conventional agreements and constraints. Other scenarios should be collected together into new versions of schools operated by a broadly representative group that is not unduly constrained by existing physical plants. Indeed, if the guiding principle were "form following function," it is entirely likely that few facilities and certainly no new ones would be needed at all. The resources of most communities are more than adequate to the tasks imagined by most who have spent more than a few minutes thinking about alternative designs. These might take the form of what John Goodlad has called "key" experimental (exemplar) schools that are coupled with demonstration schools who are assisted in taking up the activities of the key school over time. (I should note that a whole school strategy of this sort involving experimental schools and follower schools has met with some difficulties in Holland and other European countries that have attempted it. The lessons to be learned from that experience should be vigorously pursued to avoid similar pitfalls.)

Naturally it will be necessary to secure some waivers from local and state authorities, and various unions to implement many of the alternative schools. Certification requirements would have to be relaxed, definitions of working conditions suspended, and wage schedules set aside almost entirely in order to accommodate the full range of possibilities. It seems reasonable to me to expect that one could enter into "enterprises of mutual accountability"

with authorities and/or unions that would include hold-harmless provisions, long-term time perspectives, and adequate rewards for risk taking. In the near term it would almost certainly not be everyone's cup of tea and yet I cannot imagine that there are no places that would be able to work out the necessary accommodations to experiment.

Because so much has been made of the salary deficiencies of today's teachers, this problem should be pursued head on and early. Projections suggest that today's workforce is likely to be tomorrow's workforce; assuming we want our teachers to be highly competent professionals, therefore, strategies to accommodate reasonable requests for compensation must be pursued. My own initial thought is that it would not be unreasonable to offer full time eleven month teachers in such an experimental situation a salary that would be approximately double their current wage, i.e., in the $40,000 range. My guess is that it would be possible to get local businesses to contribute 50% of this increased figure for a period of perhaps five to eight years in exchange for new evaluation and accountability procedures that were mutually developed.

One of the things business people cannot abide about educators is their tendency to fob off responsibility for evaluation to someone else or to the ubiquitous "well, that can't be evaluated given its complexity" statement. There are just as many uncertainties in many businesses, especially as the trend towards information-based enterprises continues. The arguments against evaluation schemes that have worked historically will simply not hold water in the future. Educators must acknowledge the demographics -- the percentage of taxpayers with school age children now is less than 30% and shrinking. Thus, the potential partners for new endeavors are less likely to be found among the general citizenry, however interested they may be, as among potential employers who have a stake in a quality work force.

If, as is likely, the learning (and earning!) opportunities are organized around principles of mastery, it is likely that instructional and support roles will need to be differentiated and that technology will play a major part in helping organize and monitor much of the cognitive learning that takes place. Such schools will have an opportunity to serve as community learning centers available to all members of a given locale on an easy-access basis. It would seem relatively easy to establish such learning centers and make them available six days a week to whomever was interested, be they child or adult. Further, the centers could easily be networked wherever they were located via technologies that are currently available.

One would hope that among the tools that would be explored for enhancing the ongoing involvement of the larger community and learning would be creative use of media. An increasing number of communities are currently wired for cable and could certainly take

advantage of this circumstance to organize and broadcast seminars as well as provide the stimulus for town meetings concerned with creating alternate images of schools and securing input on various approaches to supporting them. Recent experiments (cf. The Chemical People) in using television for such purposes were quite successful and offer hope that the medium can be something more than simple (minded) entertainment. There is every possibility that audio and visual media combined with computer technologies can serve to supplement face to face gatherings as facilitators of community cohesion. Testing out such notions around critical questions such as the design and conduct of education for tomorrow for all citizens should be readily saleable.

The Role of Research in the Long-Term Strategy

The place of the researcher in this scenario is fairly obvious. They can, and will, of course, need to help develop the new curriculum in concert with the alternate images that have been created. While these will inevitably be localized efforts, there is every reason to believe they would want to take advantage of the best available knowledge and talent in developing the curricular offerings. Such development efforts would probably be more informed by the recent experience with interactive R&D than with past large scale efforts which tended to isolate the academics from the implementers, not to mention the citizens, and produce some exceptionally well done but never used materials and instructional alternatives. We should be able to learn from our mistakes this time. Certainly we are talking about new experiences that are intended to transform the position of educators and schools in the society, to redefine the center for learning, and revitalize what is meant by community. All of these are worthy subjects of study over time. The new paradigms that will emerge must be articulated and communicated. In the early phases of such new design efforts, there will be needs for research on community attitudes, on employer perspectives, and on available knowledge about learning. Special attention should be given to looking outside of North America for approaches, some well-tested and many experimental, that offer tremendous promise. We should not be so chauvinistic as to think that we cannot learn from our colleagues in other countries. There is also continuing need to identify and specify procedures for identifying pedagogical and leadership talent necessary to staff and manage such new ventures. This is a practical research question of substantial import.

Costs of Implementation

With respect to likely costs, it is my view that a limited number of experiments could probably be mounted for an initial federal investment of something in the order of $2.5 million for the operational side and a comparable amount for the research side. I believe corporations and foundations could be tapped to match the dollars for the operational aspects of the endeavor. (Of course,

one can imagine an endeavor ten times as large, but I would argue that a more modest effort is more realistic since we must begin rapidly.) Over the very near future most of the activity would be devoted to organizing and planning, developing multiconstituent community-based teams, and developing procedures for operating. It does not seem unreasonable to imagine at least a hundred such endeavors being initiated within the next two years. If they are fortunate, I foresee the possibility of them being operational at an early stage within five years, by which time their dollar needs would rise substantially. I would advocate a one third/one third/one third mix between federal, local, and corporate contributions for the operations of such schools with the research aspects supported primarily through federal contributions.

(Perhaps a few states would add to the pot available for research.) If the scenarios and learnings of the past ten years are any guide, it would seem reasonable to project that about ten years out we might have enough exemplars of these new approaches to begin another round of structured dissemination such as that advocated in Strategy Number One. Success in joining these two scenarios should take the country into the next century with a strengthened sense of self and move us toward a strengthened democratic world. I look forward to being part of the adventure.

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